AJAYI JANET Epidemiology communicable diseases.. CHO 300 level.

QUESTION 1

Definition of communicable disease:
It is an illness that can be transmitted from one person to another, or from animals to humans, through direct contact, indirect contact, or vectors such as insects.

Causative Agent:
Communicable diseases are caused by **pathogenic microorganisms** such as **bacteria, viruses, fungi, or parasites**.
Examples:

- Bacteria — *Tuberculosis*
- Virus — *Measles*
- Parasite — *Malaria*
- Fungus — *Ringworm*

Modes of Transmission:

1. **Direct contact** – through touching, kissing, or sexual contact (e.g., HIV/AIDS).
2. **Indirect contact** – through contaminated objects or surfaces.
3. **Airborne transmission** – by inhaling droplets from coughs or sneezes (e.g., influenza).
4. **Vector-borne transmission** – through insects like mosquitoes or flies (e.g., malaria).
5. **Food and water-borne transmission** – through contaminated food or water (e.g., cholera).

Methods of Prevention and Control:

1. Maintain good personal and environmental hygiene.
2. Practice proper hand washing.
3. Get vaccinated against preventable diseases.
4. Avoid sharing personal items (e.g., razors, towels).
5. Use insect repellents and control vectors.
6. Ensure proper waste disposal and clean water supply.
7. Isolate infected individuals when necessary.

QUESTION 2

Endemic:
An **endemic** disease is one that is constantly present within a particular region or population. It occurs regularly but usually at a predictable or steady rate.
Example: **Malaria** is endemic in many parts of Africa, including Nigeria, because it occurs there throughout the year.

Epidemic:
An **epidemic** occurs when a disease suddenly spreads rapidly and affects a large number of people in a specific community, region, or country at the same time.
Example: The **Ebola outbreak** in West Africa in 2014 was an epidemic because it affected many people within a short period.

Pandemic:
A **pandemic** is an epidemic that spreads across several countries or continents, affecting a large portion of the world's population.
Example: The **COVID-19 pandemic** that began in 2019 spread globally and affected millions of people worldwide.

QUESTION 3

Definition:

- **Incidence:**
  Incidence refers to the **number of new cases** of a particular disease that occur in a specific population during a defined period of time. It measures the **rate at which new cases develop**.
- **Prevalence:**
  Prevalence refers to the **total number of existing cases** (both new and old) of a disease in a specific population at a given point or period in time. It measures **how widespread** a disease is.

Distinction between Incidence and Prevalence:

Feature	Incidence	Prevalence
Meaning	Measures new cases only	Measures all existing cases (new + old)
Time frame	Over a period of time	At a particular point or over a period
Purpose	Shows the risk of developing a disease	Shows the overall disease burden
Formula	New cases ÷ Population at risk × 100 (or 1,000)	All cases ÷ Total population × 100 (or 1,000)
Example	200 new cases of typhoid fever in Lagos in 2024	1,000 people currently living with typhoid fever in Lagos in 2024

Importance in Epidemiology:

1. **Incidence** helps to:
    - Identify **how fast a disease is spreading**.
    - Determine **causes and risk factors** of new infections.
    - Evaluate the **effectiveness of preventive measures**, such as vaccination programs.
2. **Prevalence** helps to:
    - Estimate the **overall disease burden** in a community.
    - Plan for **healthcare resources**, treatment facilities, and manpower.
    - Assess the **impact of chronic diseases** that last for a long time, such as diabetes or hypertension.

Example:

- If in 2025, **500 new cases of malaria** are reported among 10,000 people in Abuja, the **incidence rate** is 5%.
- If by the end of 2025, **2,000 people in total** (old and new cases) have malaria, the **prevalence rate** is 20%.

QUESTION 4

Measures Used in Controlling Communicable Diseases at the Community Level

Controlling communicable diseases in a community involves organized efforts to prevent the spread, reduce the impact, and eliminate sources of infection. The main measures include:

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1. **Health Education**

Educating people about personal hygiene, sanitation, safe food handling, and disease prevention.

Promoting awareness about symptoms and encouraging early medical care.

Example: Teaching communities to wash hands regularly and cover the mouth when coughing or sneezing.

2. **Immunization Programs**

Organizing community-wide vaccination campaigns to protect people against preventable diseases.

Example: Immunizing children against measles, polio, and tuberculosis through routine national immunization programs.

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3. **Environmental Sanitation**

Ensuring proper waste disposal, clean water supply, and good drainage systems to reduce breeding sites for disease vectors.

Example: Removing stagnant water to prevent mosquito breeding (reduces malaria spread).

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4. **Disease Surveillance and Reporting**

Monitoring, detecting, and reporting cases of communicable diseases to health authorities for quick response.

Example: Early reporting of cholera outbreaks allows rapid intervention and control.

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6. **Isolation and Quarantine**

Separating infected individuals (isolation) or exposed but not yet sick persons (quarantine) to prevent transmission.

Example: Isolating patients during an Ebola or COVID-19 outbreak.

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7. **Vector Control**

Controlling insects and animals that transmit diseases through insecticide spraying, use of bed nets, and environmental management.

Example: Using insecticide-treated mosquito nets to prevent malaria.

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8. **Provision of Safe Water and Good Nutrition**

Ensuring access to clean drinking water and adequate nutrition to improve resistance against infections.

Example: Chlorinating public water sources to prevent typhoid and cholera.

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9. **Health Legislation and Enforcement**

Implementing public health laws that promote sanitation, food safety, and control of infectious diseases.

Example: Laws requiring vaccination of school children or inspection of food vendors.

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10. **Community Participation**

Encouraging community members to take part in clean-up exercises, health campaigns, and disease prevention programs.

Example: Community-led sanitation projects to reduce open defecation.

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11. **Prompt Treatment and Case Management**

Providing quick diagnosis and effective treatment for infected persons to reduce spread.

Example: Offering free treatment for tuberculosis to prevent transmission.

In summary, controlling communicable diseases at the community level requires a combination of education, prevention, environmental hygiene, surveillance, and prompt medical action, supported by active community involvement and government policy.

QUESTION 5

A. **Epidemiological Triangle**

The epidemiological triangle is a model used to explain how diseases occur and spread. It shows the relationship between three key factors

1. **Agent – the microorganism that causes the disease (e.g., bacteria, virus, parasite).**

   2.Host – the person or animal that can be infected. Factors like age, immunity, and lifestyle affect susceptibility.

3. **Environment – external conditions that influence the agent and host interaction, such as climate, sanitation, and living conditions.**

These three components must interact for a communicable disease to occur. Breaking any link in the triangle (for example, by improving sanitation or vaccination) can help prevent disease spread.

B. Vehicle-Borne Transmission

Vehicle-borne transmission occurs when infectious agents are transmitted through contaminated materials or substances known as vehicles.

Examples of vehicles include food, water, blood, or utensils.

The disease spreads when people consume or come into contact with the contaminated vehicle.

Examples:

- Drinking water contaminated with Vibrio cholera causes cholera.
- Eating food contaminated with Salmonella causes food poisoning.
- Good hygiene, proper food handling, and clean water supply help prevent vehicle-borne diseases.

C. Point Prevalence and Period Prevalence

Point Prevalence:

This measures the total number of existing cases (new and old) of a disease in a population at a specific point in time.

Example: The number of people with malaria in a community on June 1, 2025.

Period Prevalence:

This measures the total number of cases (new and old) that occur in a population during a specific period of time (e.g., a month or a year).

Example: The number of people who had malaria at any time between January and December 2025.

In summary:

Point prevalence gives a “snapshot” of disease at one moment, while period prevalence shows the disease burden over a duration.